ENDSEMESTER EXAMINATION MAY-2023

Course Name: - B.Tech **Semester:- 2nd**

Paper Name: - Energy Science and Engineering **Paper Code:- TMC-202**

Time - 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer. **Max Marks-70**

समय–3 घण्टे+ 20 मिनटप्रति घंटेअतिरिक्त–दृष्टिबाधित एवंसहलेखकपरीक्षार्थियों के लिए। अधिकतम अंक–70

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries 3 mark. All questions are compulsory.
- Section B- Answer any 5 out of 7 given questions in maximum hundred (150) words. Each question carries 7 marks.
- SectionC- Answer any 2 out of 3 given questions in maximum five hundred (500) words. Each question carries 10 marks.

निर्देश:

- प्रश्न पत्र में तीन खण्ड अ, ब, व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड–अ में प्रत्येक प्रश्न तीन अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड–ब में सात प्रश्नों में से किन्हीं पाँच प्रश्नों के उत्तर अधिकतम 150 शब्दों में दें। प्रत्येक प्रश्न सात अंक का है।
- खण्ड–स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम (300) शब्दों में दें। प्रत्येक प्रश्न 10 अंक का है।

Section – A (खण्ड–अ)

Objective Questions(वस्तुनिष्ठप्रश्न)

1. Answer allthe following questions. **5×3 =15**

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

i) Which part of the windmill act as a housing for the turbine?
   a) Wind Vane
   b) Shaft
   c) Wind mill head
   d) Turbine

ii) What is sun's declination angle during summer solstice?
   a) 23.5 degrees
   b) -23.5 degrees
   c) 0.53 degrees
   d) Zero degrees

iii) LWR stands for _____
   a) Lower water reactor
   b) Line water reactor
   c) Liquefied water reactor
   d) Light water reactor

iv) Which kind of Geothermal plant is most common type?
   a) Dry steam
   b) Flash steam
   c) Binary
   d) Wet steam

v) Kaplan is the type of which of the following?
   a) Reaction turbine
   b) Impulse turbine
   c) Steam turbine
   d) Propeller turbine

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Section – B (खण्ड–ब)
Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any five of the following questions in maximum 150 words. **5×7=35**
निम्नलिखितमें से किन्हीं पाँच प्रश्नों के उत्तर अधिकतम 150 शब्दों में दें।

i. Describe the operation of a solar cell.

ii. Explain the different forms of energy.

iii. Determine the Local Solar time (LST) and Declination at a location latitude 23 deg 15 minutes N, longitude 77 deg 30 minutes E at 12:30pm IST on June 20. Equation of time correction is = −(1' 02"). Standard Time Longitude for IST = 82.5 degree E. Also determine the Hour Angle from the obtained LST.

iv. What are the components of Hydropower Plants? Explain their uses.

v. What do you understand by Carbon Footprint and also tell us the effects of increased Carbon Footprint into the Environment?

vi. Differentiate between the solar collector and solar concentrator.

vii. Briefly explain the different types of Energy Storage Systems.

Section – C (खण्ड–स)
Descriptive Questions (विवरणात्मकप्रश्न)

3. Answer any two of the following question in maximum 300 words. **2×10=20**
निम्नलिखितमें से किन्हीं दो प्रश्नों के उत्तर अधिकतम 300 शब्दों में दें।

i) What are the different mining methods used for the Coal production? Discuss their advantages and disadvantages.

ii) Discuss in brief about the 'Ocean Thermal Energy Conversion (OTEC)' plant.

iii) Explain briefly about the 'Green Building Concept'.

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